

Collaborators and Sponsors



**ESRL Physical Sciences Division
Science Review
May 12-14, 2015**

PSD Collaborators

PSD maintains collaborations both within and outside of NOAA. Collaborations can be between individuals, groups or organizations. They can be partnerships or sponsored relationships. A representative sample submitted by PSD staff appears below. Organizations may appear multiple time to illustrate a range of activities within each.

Partners

INTERNATIONAL

Organization	Activity	Dates
Aarhus University Denmark	Development of Danish contribution to the International Arctic Systems for Observing the Atmosphere framework	2013-present
Alfred Wegener Institute, Germany	International working group to advance understanding of Arctic radiation	2013-present
Alfred Wegener Institute, Germany	International working group to advance understanding of Arctic radiation	2014-present
Australian Bureau of Meteorology	Investigation of influence of diurnal warming on SST analyses	2012-present
Dalhousie University, Canada	International working group to advance understanding of Arctic energy, moisture and gas fluxes	2013-present
ECMWF	20th Century Reanalysis Project, ERA20C, International Surface Pressure Databank	2012-present
Environment Canada	International working group to advance understanding of Arctic aerosols Global Cryosphere Watch/Cryonet Program	2012-present
ETH, Switzerland	Greenland surface energy budget studies	2012-present
Finnish Meteorological Institute	Coauthors on book chapter	2013-present
Finnish Meteorological Institute	International working group to advance understanding of Arctic aerosols	2013-present
French-German Institute at Saint-Louis, France	Refraction corrections in source localization	2009-present
Hanyang University, South Korea	ENSO diversity working group activities	2012-present
Hebrew University of Jerusalem	Satellite comparison for CalWater 2011	2012-2013
IITM/Pune India	Joint Research on Indian Monsoon	2000-2014
IPSL, Paris, France	Collaborate on ENSO metrics ENSO diversity working group activities	2012-present

Organization	Activity	Dates
Japan Agency for Marine-Earth Science and Tech.	International working group to advance understanding of Arctic radiation	2015-present
Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan	20th Century Reanalysis Project, International Surface Pressure Databank	2010-present
KNMI, The Netherlands	20th Century Reanalysis Project, International Surface Pressure Databank	2005-present
LATMOS Paris, France	Collaborate on international planning for Arctic atmospheric chemistry initiatives	2013-present
Leeds University, UK	Ice microphysics	2013-present
LEGOS, Toulouse, France	Collaborate on ENSO influence on coastal upwelling	
Max Planck Institute for Meteorology	Extended yearly visits, collaboration, student and postdoc mentoring, six publications resulting	2009-present
NIWA, New Zealand	20th Century Reanalysis Project, International Surface Pressure Databank	2010-present
NIWA, New Zealand	20th Century Reanalysis Project, International Surface Pressure Databank	2010-present
Norwegian Meteorological Institute	Development of data harvesting strategies for Arctic data and metadata exchange; SIOS and GCW	2012-present
Plymouth Marine Laboratory, UK	Air-sea transport of trace gases, chemical flux measurement technology, atmospheric sulfur cycle	2008-present
Technical University of Catalonia, Barcelona, Spain	Airborne GNSS-R wind retrievals using delay-Doppler maps Wind direction retrieval from GPS ocean-scattered signals in airborne experiments Airborne GNSS-R wind retrievals using delay-Doppler maps	2011-2014
Technische University Dresden, Germany	Acoustic tomography of the atmosphere	2001-present
UFZ, Hemholtz Institute Leipzig, Germany	Collaborator on Hydrologic Regionalization projects pertaining to regional scale hydrology and parameter transfer	2012-present
UK Met Office	Atmospheric Circulation Reconstructions over the Earth Initiative - 20th Century Reanalysis Project, International Surface Pressure Databank - co-Conveners of GCOS AOPC/OOPC Working Group on Surface Pressure	2001-present
UK Met Office	Oldweather.org, 20th Century Reanalysis Project, International Surface Pressure Databank	2011-present
UK Met Office	International Surface Pressure Databank	2004-present

Organization	Activity	Dates
Univ. Leeds, UK	Collaborative field projects dealing with air-sea transport of gases and aerosols	2010-present
University of New South Wales, Australia	Parameterization of sea spray production in hurricanes	2000-2015
University of Barcelona	Influence of summer North Atlantic Oscillation on European rainfall	2010-present
University of Bern, Switzerland	20th Century Reanalysis Project, International Surface Pressure Databank	2001-present
University of Bern, Switzerland	Rescuing and evaluating pressure observations from the early 19th century	2013-present
University of Bern, Switzerland	Comprehensive Historical Upper Air Network	2008-present
University of British Columbia	Precipitation sample collection during CalWater 2015	2015
University of Buenos Aires	Intraseasonal climate variability in South America	2004-present
University of Giessen, Germany	20th Century Reanalysis Project, International Surface Pressure Databank	2010-present
University of Leeds	Arctic field project data collection; data analyses	2008-present
University of Oslo, Norway	Effects of global warming on the Pacific Walker circulation	2011-present
University of Portsmouth, UK	Climate change in mountains	2013-present
University of Stockholm	Arctic field project data collection; data analyses	2000-present
Yonsei University	Geostationary Remote Infrared Pollutions Sounder (GRIPS) development	2012-present

NATIONAL

White House

Office	Activity	Dates
Office of Science and Technology Policy	Development of implementation strategies for Interagency Arctic Research Policy Committee	2012-present

NOAA

Organization	Activity	Dates
NCEP Climate Prediction Center	Development of reanalyses, reforecasts, and extended-range statistically post-processed guidance.	Ongoing
NCEP Weather Prediction Center	Development and testing of experimental statistically post-processed guidance	Ongoing

Organization	Activity	Dates
NESDIS Center for Satellite Applications and Research	Integration of diurnal warming information in SST analyses	2013-2015
NESDIS National Climatic Data Center	Development of 20th Century Reanalysis Project, International Surface Pressure Databank	2006-present
NESDIS National Climatic Data Center	Development of International Surface Pressure Databank	2008-present
NESDIS National Climatic Data Center	20th Century Reanalysis Project, International Surface Pressure Databank	2006-present
NESDIS National Climatic Data Center	20th Century Reanalysis Project, International Surface Pressure Databank, ICOADS	2001-present
NESDIS	Development of international working group to advance understanding of Arctic radiation and development of Global Cryosphere Watch/Cryonet Program	2012-present
NESDIS	International working group to advance understanding of Arctic radiation	2013-present
NWS Office of Hydrologic Development	Develop new algorithms/methodologies to improve QPE, especially in complex terrain	2013-present
NWS Office of Hydrologic Development	NOAA Hydrolab distributed model development	2010
NWS National Centers for Environmental Prediction	ENSO Diversity working group activities	2012-present
NWS/NCEP Environmental Modeling Center	Various activities, including reanalysis, reforecast, ensemble prediction system, and data assimilation systems.	Ongoing
NWS/NCEP Climate Prediction Center	Joint research on seasonal variability and predictability studies	1994-present
NWS/NCEP Climate Prediction Center	Joint project on Stratosphere Improvements in CFS	2010-2013

Organization	Activity	Dates
NWS/NCEP Environmental Modeling Center	NOAH land surface model validation	2010-
NWS/NCEP Climate Prediction Center	Developing next generation climate reanalysis for NOAA	2010-present
NWS/NCEP Environmental Modeling Center	20th Century Reanalysis Project, International Surface Pressure Databank, developing next generation climate reanalysis for NOAA	2001-present
NWS/NCEP Climate Prediction Center	Developing new parameterizations of stratospheric ozone and water vapor for NCEP global atmospheric models	2012-present
NWS/OST Meteorological Development Lab	Various activities, including ensemble statistical post-processing	Ongoing

NOAA Office of Oceanic and Atmospheric Research

Organization	Activity	Dates
Air Resources Laboratory	Air quality forecasting for ozone and PM2.5	2014-present
Atlantic Oceanographic and Meteorological Laboratory	Measurement and parameterization of air-sea flux of trace gases	1998-2015
Climate Program Office	Detail to the NOAA Arctic Research Program	2013
ESRL Chemical Sciences Division	Meteorological measurement and analysis for various air quality and air chemistry studies	2006-present
ESRL Global Monitoring Division	International working group to advance understanding of Arctic aerosols and radiation Joint work on Greenland surface-atmosphere interactions	2013-present
ESRL Global System Division	Meteorological measurement and analysis for various regional model improvement studies	2011-present
Geophysical Fluid Dynamics Laboratory	Conduct research on various aspects of ENSO, climate extremes and marine tipping points	2012-present
National Severe Storms Laboratory	Joint project on clouds-atmosphere over Greenland	2010-present
Pacific Marine Environmental Laboratory	Measurement of Air-sea fluxes from TAO buoys	2001-2015
Unmanned Aircraft System Program	Detail to the NOAA UAS Program	2014-2015

Other Agency

Organization	Activity	Dates
Bigelow Marine Laboratory	Marine chemistry air-sea transport of dimethyl sulfide	2007-present
DOE	Development of WFIP1 and WFIP2	2011-present
DOE Lawrence Berkeley National Laboratory	Joint studies on Arctic clouds and radiation	2009-2012
DOE Lawrence Berkeley National Laboratory	Collaborate on ENSO influence on global precipitation	2014-present
DOE National renewable Energy Laboratory	Economic value of forecasts	2014-present
DOE Pacific Northwest National Laboratory	G1 microphysical measurements comparison with aerosol observations	2012-2013
DOE Pacific Northwest National Laboratory	Instrumentation work for unmanned aircraft operations	2013-present
DOE Pacific Northwest National Laboratory	Coastal wind profiler deployments in Oregon and Washington	2013-present
DOE Sandia National Laboratory	Precipitation sample collection during CalWater 2015	2015
DOE Sandia National Laboratory	Operational support for Oliktok Point Observatory	2015 (ongoing)
DOI/USGS North Central Climate Science Center	Collaborator on projects to incorporate climate science in ecological modeling	2012-present
DOI/USGS North Central Climate Science Center	Rangwala is a climate lead at NCCSC since Jan 2015; Have also been working on a NCCSC funded project in SW Colorado since 2013	2013-present
NASA Ames Research Center	Alpha Jet Experiment	2014-present
NASA Global Modeling and Assimilation Office	Joint research on atmospheric dynamics related to drought/extremes	2008-present
NASA Goddard Space Flight Center	Joint studies on Chemistry-Climate Interactions	2008-present
NASA Jet Propulsion Laboratory	CalWater 2015 collaboration with NASA ER-2	2014-present
NASA Jet Propulsion Laboratory	CalWater 2 and NASA Earth Venture Class suborbital proposal development	2011-present
NASA Jet Propulsion Laboratory	ENSO diversity working group activities	2012-present
NASA Langley	GOES observations over precipitation sampling sites	2012-present
National Drought Mitigation Center	Evaluation of the NIDIS ACF Drought Early Warning System	2014 -present

Organization	Activity	Dates
National Snow and Ice Data Center	Development of data harvesting strategies for Arctic data and metadata exchange; Advanced Cooperative Arctic Data Information Sharing	2012-present
Naval Research Laboratory	CalWater 2015 collaborative observations of air-sea exchange	2014-present
Naval Research Laboratory	Developing new parameterizations of stratospheric ozone and water vapor for NCEP global atmospheric models	2012-present
Pacific Northwest National Laboratory	ARM Cloud Aerosol and Precipitation Experiment (ACAPEX)	2011-present
U.S. Army Engineer Research and Development Center	Atmospheric acoustics	1999-present
U.S. Army Engineer Research and Development Center	Acoustic tomography of the atmospheric surface layer	2004-present
U.S. Army Research Laboratory	Sound propagation and scattering in a turbulent atmosphere	2002-present
U.S. Bureau of Reclamation	Develop Literature Review and Science Synthesis on efficacy of Winter Orographic Cloud Seeding	2014-2015
U.S. Bureau of Reclamation	Conduct research and develop products for use in evaluating dam safety	2011-present
U.S. Bureau of Reclamation	Expert consulting and collaboration on climate and water issues for the Colorado River	2008-2013
U.S. Bureau of Reclamation	Conduct research on climate variability and extremes for water resources	2008-present
USGS Climate Science Center	Climate-scale projections of reference ET	2015 (ongoing)

ACADEMIC/UNIVERSITY

Institution	Activity	Dates
Colorado State University	Develop new methods to improve QPE using advanced radar systems as well as operational radar systems	2009-present
Colorado State University	Data assimilation in reference ET reanalysis and bias correction of Forecast Reference ET	2015 (ongoing)
Columbia University	Examine anticipated changes in the statistics of weather and hydroclimate over western North America in coming decades from the point of view of needs in the management of water and ecosystems.	2013
Columbia University	Joint research on drought assessments and predictability	2012-present

Institution	Activity	Dates
Columbia University	Quantifying feedbacks and process for elevation dependent warming	2011-present
Columbia University	Collaborative field work on the influence of ocean waves and turbulence on air-sea transport of gases	2010-present
CSU	IN measurements of precipitation samples	2012-2014
Florida State University	Develop satellite-derived near-surface temperature and humidity product and associated heat flux products	2008-present
Georgia Institute of Technology	ENSO Diversity working group activities	2012-present
National Center for Atmospheric Research	Development of Evaporative Demand Drought Index	2015 (ongoing)
Naval Postgraduate School	Data assimilation in the Regional Arctic System Model	2012-present
Naval Postgraduate School	Sound propagation in a fluctuating ocean	2009-2013
Naval Postgraduate School	Joint Arctic observational & analysis projects	1997-present
NCAR	Joint studies on Africa climate/NAO variability	2002-2014
NCAR	Joint studies on Arctic mixed-phase clouds	2009-present
NCAR	Development of new State-of-the-Art pressure sensors	2014-present
NCAR	Air quality forecasting for ozone and PM2.5	2013-present
NCAR	20th Century Reanalysis Project, International Surface Pressure Databank	2010-present
NCAR	Conduct research on hydrometeorological flood simulation/prediction	2013-present
NCAR	Conduct research on hail in future climates in WRF simulations	2010-2012
NCAR	Joint work on National Climate Predictions and Projections Project	2012-2015
NCAR/MMM	Analysis of demographic changes in the atmospheric sciences, and of various means by which those data are acquired	2006-present
New Mexico State University	Sound propagation in the atmosphere	1996-2011
Oregon State University	Measurement of cloud microphysics with radar	2007-2015
Oregon State University	Greenland surface-atmosphere interactions	2013-present
Plymouth State University	CalWater 2015, Snow-level radar research, development of an AR portal	2013-present
Rutgers University	Quantifying feedbacks and process for elevation dependent warming	2005-present
Scripps Institution of Oceanography	Atmospheric river research , CalWater 2, western obs.	2008-present

Institution	Activity	Dates
Scripps Institution of Oceanography	CalWater 2015 collaborative observations of GPS meteorology	2014-present
Scripps institution of Oceanography	CalWater 2 and Alpha Jet Experiment	2011-present
Texas A&M University	ENSO diversity working group activities and 20th Century SODA reanalysis	2012-present
Texas A&M University	Simple Ocean Data Assimilation with Sparse Input, 20th Century Reanalysis	2008-present
Texas Tech University	Boundary layer remote sensors	2014-present
Uni. of CO/Civil and Environ. Engineering	Joint research on Indian Monsoon, Colorado River flow variability	2004-present
University at Albany	Collaborator on Chilean Coastal Orographic Precipitation Experiment (CCOPE)	2014-present
University of Connecticut	Air-sea flux measurement technology; wave effects	1990-2015
University of Miami	Boundary-layer cloud physics	1999-2015
University of Alaska	International working group to advance understanding of Arctic energy, moisture and gas fluxes; workshop planning	2013-present
University of Arizona	WRF Modeling and NOAA USWRP research proposal	2014-present
University of Arizona	ENSO diversity working group activities	2012-present
University of Arizona	Research on characteristics of climate expertise	2012-present
University of California Irvine	ENDO diversity working group activities	2012-present
University of California, Irvine	Hydrological modeling	2014-present
University of California, Los Angeles	HONO/Ozone titration during UBWOS 2012 and 2014	2013-2014
University of California, San Diego	CalWater precipitation chemistry research	2012-present
University of California, Santa Barbara	USAID/FEWs Net focused work on Africa climate variability/change	2010-present
University of California, Santa Barbara	Intraseasonal and interannual climate variability in South America	2001-present
University of Chicago	Joint studies on stratosphere-troposphere dynamical coupling	2009-present
University of Colorado	Development of the Regional Arctic System Model	2011-present
University of Colorado	Design of unmanned aircraft systems for operation in Arctic Environment	2013-present
University of Colorado	Joint studies on Arctic clouds and climate	2009-present

Institution	Activity	Dates
University of Colorado	Balancing Severe Decision Conflicts under Climate Extremes in Water Resource Management	2013-present
University of Colorado	Climate-Water-Electricity: Evaluating how climate change affects water availability and the future of the U.S. electricity sector	2013-2014
University of Colorado	Boundary layer remote sensors	2014-present
University of Colorado	Collaborate on developing a recreational transportation management tool targeting at All Terrain Vehicle (ATV) use.	2011-2012
University of Colorado	Soil moisture, snow depth and vegetation measurements using GNSS-R Interferometry	2008-present
University of Colorado	Development of GNSS-R bistatic radar for ocean wave measurements	2008-present
University of Colorado	CESM climate model performance over Greenland	2014-present
University of Colorado	International working group to advance understanding of Arctic radiation	2013-present
University of Colorado and NSF	Collaborate on CAMPS aircraft campaign in Colorado	2010-2011
University of Hawaii	ENSO diversity working group activities	2012-present
University of Hawaii	ENSO diversity working group activities	2012-present
University of Hawaii	Air-sea transport of trace gases, atmospheric chemistry and physics of marine aerosols	1992-present
University of Idaho	Collaboration on various Arctic research projects	2008-present
University of Illinois	Greenland surface-atmosphere interactions	2013-present
University of Maryland	Geostationary Remote Infrared Pollutions Sounder (GRIPS) development	2012-present
University of Miami	Co-chairs US CLIVAR working group on ENSO Diversity	2012-present
University of Michigan	Dust impacts on San Juan Mountains	2015 (ongoing)
University of Michigan	Development of wind speed retrieval algorithms for CYGNSS project	2011-present
University of Michigan	Joint work on National Climate Predictions and Projections Project	2012-2015
University of Nebraska	International working group to advance understanding of Arctic energy, moisture and gas fluxes	2013-present
University of Nevada Reno	Development of Evaporative Demand Drought Index	2015 (ongoing)
University of Texas	Boundary layer remote sensors	2014-present
University of Utah	Collaborate on StormVex campaign in Colorado	2010-2011

Institution	Activity	Dates
University of Washington	Hydrometeorological research focused on the Sierra Nevada	2010-present
University of Washington	Joint Arctic observational project	2013-present
Vanderbilt University	Joint project on clouds-atmosphere over Greenland	2010-present
Vanderbilt University	Greenland atmospheric research	2010-present
Washington State University	Joint project on clouds-atmosphere over Greenland	2010-present
Washington State University	Development of international working group to advance understanding of Arctic radiation	2013-present
Washington State University	Collaboration on various Arctic research projects	2007-present
Woods Hole Oceanographic Institution	Measurement of Air-sea fluxes from Flux Reference buoys	1991-2015
Woods Hole Oceanographic Institution	ENSO diversity working group activities	2012-present

REGIONAL AND LOCAL

Organization	Activity	Dates
Colorado Natural Heritage Program	Gunnison Climate Working Group	2009-2013
Cooperative Institute for Research in Environmental Sciences, (University of CO)	To conduct innovative research that advances our understanding of the global, regional, and local environments and the human relationship with those environments, for the benefit of society.	Ongoing
Cooperative Institute for Research in the Atmosphere (Colorado State University)	To conduct interdisciplinary research in the atmospheric sciences by entraining skills beyond the meteorological disciplines, exploiting advances in engineering and computer science, facilitating transitional activity between pure and applied research, leveraging both national and international resources and partnerships, and assisting NOAA, Colorado State University, the State of Colorado, and the Nation through the application of our research to areas of societal benefit.	Ongoing
Denver Water	Joint research into usability of climate information by water utilities; Front Range Climate Change Vulnerability Group	2008-present
Desert Research Institute	Development of Evaporative Demand Drought Index	2015 (ongoing)

Organization	Activity	Dates
Mountain Studies Institute Durango, CO	Climate science research and communication related to ecosystem resiliency in the San Juan Mountains and Four Corners region; including development of high school educational material related to climate change in mountain systems	2007-present
Southwest Research Institute, Boulder, CO	Development of end-to-end simulator for Cyclone GNSS (CYGNSS) project	2011-present
The HDF Group	Development of data harvesting strategies for Arctic data and metadata exchange	2012-present
The Nature Conservancy - Colorado	Climate science and risks communication and integration in conservation projects in the Upper Gunnison Basin	2013-present
Western Water Assessment	Climate Change in Colorado 2014 Report; Climate Scenarios in Landscape Conservation Design with Southern Rockies LCC	2013-present
Western Water Assessment	Studies on the interaction climate and multi-purpose reservoir management in several western reservoir systems, municipal water management and climate.	1998-present
Western Water Assessment	Assessment of hydrologic impacts of bark beetle and dust-on-snow on the Colorado River.	2012-present

COMMERCIAL

Company	Activity	Dates
AMEC	Expert consulting on Colorado water resources issues and climate; Colorado Climate Technical Advisory Group	Ongoing
AWS Truepower, LLC.	Improving wind forecasts	2011-present
Exelis	Development and maintenance of wavelet analysis website and software	1995-present
Remote Sensing Systems	Collaborate on ENSO precursors	
Riverside Technology, Inc.	Collaborate on developing the Community Hydrologic Prediction System - Flood Early Warning System (CHPS-FEWS) application for the Russian River and Napa River watersheds, California by providing calibrated input decks, forcing data, QPE retrieval automation codes, and various modeling consultancy.	2014
Science and Technology Corporation (STC)	Geostationary Remote Infrared Pollutions Sounder (GRIPS) development	2012-present
Science and Technology Corporation (STC)	Hyperspectral infrared soundings	2013-present
Scintec	Development of 915 MHz wind profiler technology	2013-present

Company	Activity	Dates
Stratus Consulting, Inc.	Joint research into usability of climate information by water utilities	2008-2013
Swiss RE, Inc.	Improving wind forecasts	2011-present
The HDF Group	Development of data harvesting strategies for Arctic data and metadata exchange	2012-present
Vaisala	Improving wind forecasts	2014-present
WindLogics, Inc.	Improving wind forecasts	2011-present

Sponsors

PSD receives more than half of its annual operating funds through sponsors, both from within and outside of NOAA. The primary sponsors of PSD's research are listed below by category in descending order of funds received over the last five years.

NOAA OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH

- Climate Program Office
- Geophysical Fluid Dynamics Laboratory
- Health of the Atmosphere Program
- National Integrated Drought Information Service
- Sandy Supplemental
- Unmanned Aircraft Systems
- U.S. Weather Research Program
- Wind Forecast Improvement Project

NOAA

- National Environmental Satellite Data Information Service
- National Marine Fisheries Service
- National Weather Service

OTHER-AGENCY

- California Department of Water Resources
- California Energy Commission
- Office of Naval Research
- Sonoma County Water Agency
- U.S. Agency for International Development
- U.S. Army Corps of Engineers
- U.S. Department of Energy
- U.S. Navy
- Vaisala Corporation